

Joseph J. Guarneri, Ph.D.
Long Island Jewish-Hillside Medical Center
New Hyde Park, New York 11040

The Influence of Extended Exposure to Cigarette Smoke on Pulmonary Resistance to Infection as Related to Alveolar Macrophage and Mucociliary Function.

Proposed studies are a comprehensive evaluation of the influence of cigarette smoke on pulmonary defense against inhaled bacteria. The specific parameters of pulmonary defense to be assessed include total lung clearance of inhaled bacteria, alveolar macrophage activity, and mucociliary function in the normal situation and during the inhalation of cigarette smoke.

The procedure of this research depends on four major techniques: (a) depositing predictable numbers of aerosolized bacteria in the trachea and lungs of animals; (b) harvesting alveolar macrophages; (c) quantitating the antibacterial activity of alveolar macrophages; and (d) producing reproducible concentrations of puffed cigarette smoke.

Experiments are proposed which permit an evaluation of the influence of extended exposure to cigarette smoke on the following parameters of alveolar macrophage activity: (a) oxygen uptake; (b) glucose metabolism; and (c) hydrolytic enzyme activity.

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